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"DENTAL PREPAREDNESS"*

Frank F. Lamons, D.D.S.
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"National Defense" and "Preparedness" are not new words in our vocabularies, but they are subjects which today are requiring a great deal of our attention and thought. Probably no topic is now more discussed in American public life. It is heard over the radio, at the family dinner table, on the golf course—in fact, wherever two or more are gathered together some phase of the national defense program is sure to enter into the conversation. To say that it is affecting us materially is stating it mildly. March 15th has just reminded us in a very touching way that our government is in the midst of a vast program of armament building and military training. We are becoming so accustomed to the language of "millions and billions" that we scarcely pause to think of the far reaching influence this program is playing, or is going to play, in our everyday life. We are sure to feel its effect economically, socially and philosophically. Our thinking is undergoing a change, and we may rest assured that never again in our history as a nation shall we feel secure with the small military force of a few short years ago. The raising of a large army by selective service, or drafting, has been accepted by us without undue emotional upset. The dental profession, however, will be upset over the fact that rejections for service because of defective teeth leads the list of all other classifications.

General Leigh Fairbank, in an address before this society last October, said, "Dentistry is facing a big responsibility today. Our plans when compared with the last war, show improved training efforts, new organizations, an entirely new type of equipment and supplies and the entire modernization of dental service. This has been done to assure the finest dental service for our soldiers. Dentistry must make a real effort. It must assure us of accomplishments of which we as professional men might be proud." General Fairbank emphasized national defense, and has challenged the profession to a great effort in behalf of our armed forces. Dental care for our armed forces *is* a pressing problem at present. I have an abiding faith that this problem, great as it is, will be met and cared for with the quickness and dispatch of American efficiency. The problem of today will be met, *but this is not all;* the problem of *tomorrow* we also have with us today. It presses for an answer and may aptly be termed *Dentistry for Children.*

Dental preparedness does not begin at age 21. It begins with the small child. We cannot legislate dental health by appropriating a few millions of dollars to restore the teeth of our armed forces. As in any process of education we must begin with the child, the young child, if we are to secure *real* dental preparedness.

*Read before the Louisville Dental Society, Louisville, Ky., March 20, 1941.

In the opening paragraph of this paper, I purposely omitted the mention of the editorial columns of our daily newspapers when naming the channels through which national defense is being discussed. The editorial columns of a free press, as we know it in America, are among the most powerful of all influences in forming public opinion. When they speak of, and to, the dental profession we may profit greatly not only by paying attention but by action.

The following is an editorial which appeared in the Atlanta Journal, under the date of December 3, 1940:

"The Nation's Health"

"On a day in New York City last week one-fourth of the men examined under the selective service law for military training were turned back. They were rejected for *bad teeth,* bad eyes, and various other defects.

"These were the country's young men, no doubt the healthiest of all ages and groups. The rate of rejection in New York City is higher than most. From all reports the rejections in many other communities are discouragingly high.

"This tells a tale of national health which is anything but good. In an age of perfected medical science and skill, it is a doleful record of men incapacitated for military service in their youth. Teeth can be saved or supplied. Eyes can be improved. Most of the defects of youth can be prevented or cured.

"The teeth have not been saved, the eyes corrected, the diseases prevented or cured. The nation is no stronger than the people comprising it. In a world at war, the health of the people is a national, not merely an individual, concern. This is a sad record of a strength in our people not conserved.

"The whys and wherefores *press* for answers as few questions do." It is significant to note that this editor has placed bad teeth at the head of the list. Whether or not this was intentional is beside the point. It is certainly true that the percentage of rejections of the draftees because of dental disability, is far too high to be comforting to the dental profession.

In the January 10th, 1941 issue of "Public Health Reports" Britten and Perrott have published an article entitled "Summary of Physical Findings of the Men Drafted in the World War." This study was undertaken to afford some indication of the numbers of men who, because of physical impairments, will be classified as not available for general military training in the various states between now and July 1st, 1941.

This study was based on the so-called "Second Million" men called for military service and examined at camp after May 1st ,1918. In speaking of their figures they state, "On this basis 21.3 per cent of drafted men were rejected, 9.9 per cent were placed in limited service groups, and 52.1 per cent were found to have defects. Thus, about one-third (31.2) per cent were classified as not available for general military service."

In a further break down of these statistics the writers have shown that

24.2 per cent of these men were rejected or accepted for limited service only, because of defective and deficient teeth.

The conclusions reached in this article are interesting, but I shall quote only two of the six headings.

"3—On the basis of the World War draft of 1917-1918, one might expect that, to meet the quota of 800,000 men inducted by July 1st, 1941. 1,200,000 would have to be examined and thus about 400,000 would not be available for general military service.

"4—On the same basis, the estimated number of defects to be found among these 400,000 persons is given, the most frequently occurring conditions which are largely *remediable* being defective vision, underweight, tuberculosis, *defective and deficient teeth*, hernia, and venereal diseases."

This statement of conditions as they existed in 1917-1918 is accurate and throws some light on the statistical data which we may gain from the present findings of the medical examining boards. During the meeting of the American Dental Association at Cleveland, Ohio, last September, a local newspaper carried an article quoting our leaders in dentistry to the effect that 25 per cent of the men examined by the draft boards would be rejected because of physical defects. They further stated that approximately 30 per cent of these rejections would be because of dental disability.

I have attempted to verify this statement by consulting the local officials of the State of Georgia. I would like to quote from a private communication received from Dr. Edgar H. Green, of Atlanta who is the Chairman of the Medical Advisory Committee of the State Medical Association, for the Draft Examining Boards. "Of all the men examined by local draft board physicians, 17 per cent were rejected on account of defective teeth. Of those passed by the local boards, the induction boards of the Army rejected 2.2 per cent. This gives an approximate rejection of 19½ per cent of all men examined by local draft and induction boards."

These figures, when compared with other causes for rejections, are alarmingly high. Compare them with heart diseases, because of which 13 per cent of those examined were rejected by local draft boards and another 7 per cent by the induction boards; or compare them with musculo-skeletal defects, through which 10 per cent were rejected by local boards and another 4 per cent by induction boards. These figures are subject to further revision when all of the draftees have been examined; and it is to be hoped that the final figures will not reflect any more unfavorably on our profession. We must conclude, from even a casual survey of these findings, that dental preparedness does not begin at age 21.

Since the last war, the advance of the dental profession has been remarkable. The accomplishments of the last twenty years have been the most outstanding in all our history. Better denture materials, better casting golds, better filling materials have been developed and have been standardized by the Bureau of Standards at Washington. Better techniques have been developed and the standards of dental education have been raised so that

we are now graduating from our dental schools, not only a higher type of individual, but a more highly trained dentist.

In the educational field we can reflect upon one major development which is sure to have its influence on dental preparedness of the future. I refer to the teaching of Dentistry for Children in our dental schools. The American Society of Dentistry for Children may rightfully claim credit for this comparatively new field in dental education.

The American Society of Dentistry for Children was organized by a small but zealous group of men in 1927, at Detroit during the annual meeting of the A. D. A. Its avowed purpose was the promotion of dentistry for children. It was founded with the idea in mind that the *general practitioner must be encouraged* to do more work for children. It is not an organization merely for specialists.

The leaders of this group realized very early that the education of dental students to a proper appreciation of their responsibility to children was of paramount importance. How well they have succeeded in this endeavor may be understood when it is realized that of the 46 dental colleges then in operation in the United States and Canada, only four made any attempt to give students instruction in pedodontics. It may be further pointed out that this instruction consisted of a very few lectures, given along with the lectures in operative dentistry. Today there is not a single dental school in the country which does not have a separate course or department for the teaching of Dentistry for Children. Many have separate clinics, some of which are maintained by endowments. The instruction given during the past six to ten years has prepared the younger members of our profession to manage successfully the children who come to their offices. These younger dentists have not only been taught better methods in Dentistry for Children, but in the vast majority of cases they have been impressed with their professional obligation to their younger patients.

May I again quote from General Fairbank?—"The Nation is certain to require 3000 dentists for military service each year. It is our desire to secure these dentists without demanding great personal sacrifices, without depleting dental service in any community, and without interfering with dental education. The mobilization of dentistry for national defense can very easily *upset* the entire dental structure."

General Fairbank may not have thought of this inferred upset as relating to the practice of dentistry for children, but it is certainly true that when the 3,000 dentists are called to service it will be the younger men who are called—the men who are, by reason of their more recent education equipped to care for the children of the community. Upon whom then, does the responsibility fall? It is upon the older members of the profession, and therein lies the *upset.*

The responsibility of dental health is the responsibility of the entire dental profession. The individual practitioner most frequently called upon to render service to a young patient is the general practitioner, or the family

dentist. His responsibility becomes greater with each succeeding day and it cannot be ignored. He must accept this responsibility if we are to provide adequate dental preparedness in the future.

I have previously referred to the remarkable achievements and advances of the dental profession during the past two decades. May I call to your attention another remarkable achievement of our profession during this same period? I refer to the achievements and accomplishments in the promotion of public health. I know of no dental society which does not have its public health committee. We have reached out until we are now assisted in our efforts by Federal and State governmental agencies. We are also assisted in our educational programs by many lay organizations, such as Parent-Teacher groups, 4-H Clubs, Civic Clubs and others. We might also mention the tremendous effect of radio advertising by commercial concerns in making the public more dental minded. The familiar slogan, "Brush your teeth twice a day and see your dentist at least twice a year," has made many people conscious of their teeth. No one can deny the effects of our educational efforts on the public mind, or feel that they have reached their full proportions at the present time.

On June 12th, 1940, there was incorporated in the District of Columbia an Association under the name of the "National Dental Hygiene Association," organized as a philanthropic, non-profit-sharing corporation for the advancement of dental health for the American people. The purpose of this association, as set out in a booklet recently received by the writer, is "to encourage social and civic-minded *lay* men and women to become actively interested in the field of dental health to the end that they will give support to such worth-while community programs under way or contemplated, as will aid in the advancement of dental health for all the people, and to stimulate all citizens to seek adequate dental care for themselves and *for their children.*"

This is a lay organization established by the Martha M. Hall Foundation of New York City, through a grant of funds to defray the basic expenses of an educational program for an initial period of years. It has the sympathetic interest and cooperation of the A. D. A., the United States Public Health Service and the American Association of Public Health Dentists. I have not carefully examined the precepts or purposes of this organization, but I am very greatly impressed by one article in their booklet. I quote one section:

"Studies and surveys indicate that the following conditions exist in the country as a whole:

"Ninety per cent of the children have one or more decayed teeth.

"The teeth of children under fourteen years of age are decaying six times as fast as they are being filled."

That the above is a statement of fact, I have no doubt. It is perhaps one of the reasons why Knutson, Klein, and Palmer in an analysis of their studies and finding from the Hagerstown, Maryland, survey made by the U. S.

Public Health Service, drew as one of their conclusions the following: "A problem which largely resolves itself into one of so redistributing the dental services in the chronologic age scale of the human population that, through proper and adequate dental care at the most effective age, youth, less may be required for the dentally healthier adult of the future."

We may state this a little differently to make it more meaningful in this dissertation. More work must be done in the dental offices today for children and less for adults; we, as a profession, must realize that dental preparedness does not begin at age 21.

Every department of Public Health of every State has some form of dental program. Some are more elaborate than others. Some carry on an extensive corrective program, while others maintain an educational program only. All have their educational programs and it is *not* of mere passing interest to note that all of these educational programs are directed toward the children. Their greatest efforts are realized in connection with the public school systems, and to the best of my knowledge and belief, all of the corrective clinics are operating for the benefit of the indigent school children.

The greatest obstacle in any dental health program is the attitude of the private practitioner of dentistry. I should like to draw here a clear distinction between the attitude of groups such as our dental societies and that of the private dentist or practitioner. You may be shocked at this statement, but it is never-the-less true. Public health programs receive a set-back every time the private practitioner minimizes the importance of dentistry for children to the interested parent, or when he dismisses them with such remarks as "They are just baby teeth—no use to fill them; they will soon be lost."

We have made great advances in educating our laity to appreciate dental health. We have made great advances in educating the dentists who are graduating from our dental schools today regarding their responsibility to children. There is still much work to be done in educating the private practitioners and particularly the older members of the profession, to a point where they are willing to accept their personal obligation as dentists in maintaining dental health for the children who come to their offices.

The answer to this problem may lie in socialized, or state, dentistry. Do not, under any circumstances, think that I am advocating such a program. I have listened to many talks and read much in our journals to convince me that there are many evils in this method of producing dental health for the public. I simply raise the question and ask you to supply the answer.

I would like to quote from a paper read by Drs. Oppice and Hillenbrand before the American Association of Public Health Dentists, at their annual meeting at Cleveland, Ohio, last September.

"The average dentist has an 'odd faith' that 'selling' dentistry might help his income. He thinks that the stuff the practice-management experts pass out is pretty sound, but that 'it wouldn't work in his office.' He isn't quite sure of what 'socialized dentistry' really is, but he is against it, probably

because, 'there would be politics' in it. He would like a regular predictable income but would hate working for anybody. He's against communism although his definition of it would surprise Messrs. Stalin and Marx. He does work for children, but, admittedly, doesn't care much about it. He's also a little careless in his children's dentistry because 'they are only baby teeth'."

If we ever have any form of socialized dentistry, we may rest assured that its beginning will be in the form of a service for children. Our American Dental Association vigorously opposed the "Wagner Bill' and similar legislation introduced in Congress. The Association through its duly appointed "National Health Program Committee" has gone on record with a program which we are willing to support. I am sure you are familiar with it; however, I should like to quote a part to refresh your memory on that portion which deals with dentistry for children.

"Article 4." "The following dental program should be carried on until the discovery of the cause of dental disease enables a more informed attack on the problem:

(a) A program of preventive dentistry for children that would be based on the present knowledge on the subject, in order to decrease the future accumulation of dental disease. This would include a development of the educational program, initiated by the American Dental Association, to preserve the natural teeth and to teach both children and parents the importance of preventive dentistry during the prenatal, infant, preschool, and school periods.

(b) A program of education for dentists to make available to them the latest advances as they are revealed through clinical experience and research.

(c) A program of providing 'the highest quality of dental service to those of the population whose economic status, in the opinion of their local authorities, will not permit them to provide such care for themselves, to the extent of providing prenatal care, the detection and correction of dental defects in children, and such other services as are necessary in the rehabilitation of both children and adults."

These quotations are cited to impress on you the attitude of the leaders of our profession in taking care of the indigent groups who need dental services. May I call your attention to the fact that nothing is mentioned in this program about the construction of removable gold or rubber partial dentures; that nothing is said about percelain jacket crowns, nor is any mention made of extensive pyorrhea treatments? The emphasis is placed on a program of "preventive dentistry for children."

We, as a profession, find ourselves facing a situation of our own making which may result in a form of socialized dentistry sponsored by the Federal Government and paid for by the tax-payers. We are educating our people to appreciate and want dental and oral health. We are placing the emphasis on a preventive program which must have its origin with the young child. To do this we have geared our public health educational program that both

parent and child may appreciate dentistry for children. Our situation resolves itself into this one thing, namely, rendering this service instead of taking a careless attitude because they are "only baby teeth."

Public opinion is sure to demand a better and more wide-spread service for children. The public is becoming educated to want this, and what the public wants, it usually gets. You may feel that it is just as well for the Government to take care of these children. It may leave you a more lucrative practice in other fields. I have heard this sentiment expressed by intelligent and well-meaning practitioners. Let us analyze this attitude for its true worth.

Figures from the United States Public Health Service indicate that:

(a) 22 per cent of the people go to a dentist for all or a part of the necessary service.

(b) 58 per cent of the people can afford all or some dental service but do not seek any dental service.

(c) 20 per cent of the people cannot afford dental service and may be considered as the dentally indigent for whom service must be provided by others.

It is this 20 per cent, classed as dentally indigent, for whom the government will provide services if they follow the recommendation of the A. D. A. What then becomes of the other 80 per cent? The 22 per cent who are now getting service and the 58 per cent who can afford service but are not getting it. They remain where they are today, in the hands of the private practitioners, and if we do not provide service for this group after educating the public (that is, the parents) to want adequate dentistry for their children, then they may demand it by legislation. When they do, it will be the first step in demanding a broader service for all types of dentistry, and socialized dentistry is the inevitable result.

There are perhaps two good reasons why dentists do not work for children. 1—They feel that they cannot successfully manage them, and 2—They feel that they cannot get paid for the time and effort expended in rendering the service. Let us discuss these.

1—They feel that they cannot successfully manage children. This condition is in most instances a state of mind. Any dentist who will put the time and effort in a problem of management with a child may expect the same successful results he achieves in the management of his most nervous and fastidious adult. Our literature is full of helpful suggestions on the management of children as well as descriptions of technic, methods of operative procedure, and exhaustive practical applications of aids which may be used to secure the desired results.

The U. S. Public Health Service maintains full-time dentists whose duties are to travel over the country and to give refresher courses in Dentistry for Children. Graduate and post-graduate courses are offered at leading universities and almost every State Association program has one or more clinicians in this subject. The management of children largely evolves itself

into one of enthusiasm and desire on the part of the individual dentist.

2—They feel that they cannot get paid for the time and effort expended in rendering the service. We must admit that this is a just criticism. The answer may lie in our habit of thinking. We have grown up under the idea that children go for half price in the dental office because they get a half price ticket to the picture show, on the train, and in many other similar situations. It is not uncommon to hear the parent say, "Do you charge that much just to fill baby teeth?" If we weaken here, we are lost. Our answer should be, "We charge more because we are rendering a greater service." On this point we will have to educate the parents as to the individual needs of their child and herein we must not fail. Parents are educated in a general way as to the value of dentistry for children, but they have never quite thought of it as it may apply to their own children. Those who have taught us the finer points of *practice management* have told us how we must make a very thorough diagnosis of every mouth before beginning any treatment. When this is done, we must carefully explain our findings to the patient and create a desire on the part of the patient to want the health service we are capable of rendering.

We are told to carry this a step further. We must create in the mind of the patient the desire for this health service for *himself,* and when he is thoroughly familiar with its benefits and has the desire for the service, we should then explain the financial outlay necessary and the terms of payment.

I say to you without fear of successful contradiction that if the same thorough methods are followed in diagnosing the dental diseases and needs of a child, if the same careful plan of presenting our findings to the parents are followed, and if the financial outlay is expressed in terms of "the time and effort involved" in rendering this health service, we may expect the same successful financial results in our dealings with dentistry for children.

Several years ago, I did not follow this plan as carefully as I try to do at present. I had this interesting experience. A child was referred to my office by a dentist with an excellent reputation. His reasons for referring this patient were expressed to my assistant by his assistant as follows, "She (an eight-year-old girl) is too hard to work for, and besides we are too busy with grown-folks." When the mother received our statement at the end of the month for the services rendered, she complained to the referring dentist, who promptly took the matter up with me. I discussed with him the details of the services and the charges for each item in an effort to convince him that the statement was not "padded." His reply was, "Well, you charge more for filling kids' teeth than I do. You charge about the same thing I charge for fillings for my grown folks. I know I don't charge enough for my work on kids but I make it up on the parents." With an attitude of mind like this, is it any wonder that the dental needs of children are neglected in too many dental offices? Surely if the dentist himself was as thoroughly "sold" on the dental health of children as he is on the necessity of inlays, crowns and bridges, plates, and those big ticonium castings, he could con-

vince the average parent that he will render a real health service to the child and should be paid accordingly.

We have shown how our nation in its "all out" program of preparedness and national defense has uncovered as the principal flaw in the health armor of our drafted men dental disability. The dental profession is awake to its part in this program, but it should also rise to the challenge given it in the implied accusation of neglect in a most important field—that of dentistry for children. We have noted the educational advantages of the younger members of our profession and the added responsibility of the older members in this field when the younger members are called to the service. We have shown how public health education has created a desire for more adequate dentistry for children. We are led, therefore, to the following conclusions:

First—that, if our profession is to hold to its high ideals, we must provide the best service possible for children; since dental preparedness does not begin at age 21.

Second—that, unless we wish the public to demand socialized dentistry in an extended form, we must provide such service through the private practitioner.

Third—that, the responsibility for this service rests with the general practitioner, especially the older dentists since the more recent graduates are being called to service with our armed forces.

GROWTH AND DEVELOPMENT AS INFLUENCED BY VITAMINS

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For many generations the consumption of food by the individual has been known to produce growth and development. That certain foods can produce this result better than others has been long established. The fact that some foods produce more rapid growth than do others is of more recent origin.

It was once believed that the retardation of growth by dietary means would add to the life span of the individual. The research work on rats performed by McCay[1] showed that while this conclusion was true of those that lived, and they were few, all of the restricted rats were in a state of chronic invalidism throughout their lives. On the other hand, Sherman[2] showed that by increasing the nutrient factors, rats showed increased growth, added vitality, and longer life.

That the various food elements play an important part in body growth has long been recognized. Barenberg[3], in 1930, demonstrated that infants fed carbohydrate in the form of milk-sugar had better growth than had the control group. Osborne and Mendel[4] showed that the addition or restriction

of protein could increase or retard the growth of young rats. The importance of minerals to growth was demonstrated by Schrader[5] who found that young rats fed a potassium-deficient diet not only showed no growth but actually lost ten per cent in weight during the twenty-three days that they lived.

Though much has been learned relative to the role played by vitamins in the process of growth and development, many problems still remain unsolved. It is known that vitamins assist the various food elements in their metabolic processes. Since these processes are, in themselves, complicated, and since their actions are in most cases correlated, the complexity of the vitamin problem becomes the more apparent.

Relative to the supply of vitamin A in the new-born, Dann[6] has demonstrated that the reserve is surprisingly low. It is obvious then that the level must be raised from outside sources. Human colostrum has from two to three times the biologic activity of early milk. Cow's colostrum is from ten to one hundred times richer in vitamin A activity than milk and so provides the calf with a rich supply of vitamin A during the first few days of life[7]. However, this high vitamin A content does not remain high during later lactation. Investigations have shown that late human milk contains about the same amount of vitamin A as does cow's milk.

Realizing the importance of vitamin A to growing children, the Technical Commission of the Health Committee of the League of Nations[8] recommended a daily diet for children, two to fourteen years of age, sufficient to provide between 6,000 and 8,000 units of vitamin A. This amount was apparently considered adequate to take care of growth and development and to render a fair amount for bodily storage.

Interruption of growth in infants and young animals appears to be one of the first symptoms of vitamin A deficiency. Loss of weight occurs through loss of fat throughout the body, and through muscular atrophy. Tozer[9] found extensive bone changes associated with this deficiency. There appeared to be complete cessation of endochondral bone formation. The bones became fragile and the general bone condition was quite similar to that found in severe scurvy.

Since loss of appetite is one of the marked symptoms of vitamin B_1 (thiamin) deficiency, it can be seen readily that growth and development will suffer, especially in the young, because of an insufficient amount of this vitamin. Indeed, many of the so-called "feeding problems" might be solved by the mere restoration of the thiamin level to normal. So widespread throughout the system are the effects of this deficiency it is difficult to believe that it is restricted to specialized tissues or to a narrow function. The experimental work of Kon[10], on birds, and Chase[11], on animals demonstrated that the effects are general, and that in both cases retardation in growth and loss of weight resulted from a thiamin deficiency.

In a study of underweight children, Morgan[12] obtained weight gains of from 150 to 170 per cent above the expected gain when the children were fed two wheat germ rolls at the noon meal. The control group received

white flour rolls and gained only from 50 to 71 per cent during the same period.

Working with children also, Summerfeldt[13] observed gains of 4.54 and 5.27 pounds in ten weeks through the feeding of 4.2 ounces of wheat germ and 0.28 ounce of yeast in breakfast cereal. The controls, given ordinary cereals, gained only 1.25 and 1.27 pounds respectively.

In young children in whom the thiamin deficiency is not such as to show signs of beriberi it would appear that the deficiency is linked with deficiency in other elements, such as the minerals and protein, and perhaps other vitamins. In such cases improvement in the quality of food intake in general will do much to alleviate the thiamin deficiency.

There appears to be ample evidence that riboflavin (vitamin B_2) has a marked influence on growth and development. Goldberger[14], in 1926, reported an arrest in growth of rats as one of the main symptoms of riboflavin deficiency. Lepkovsky[15], experimenting with turkeys, found that on a riboflavin-deficient diet the birds grew very slowly, but when the basal diet was supplemented with riboflavin in the proportion of 2 mg. per 100 grams of diet there was no mortality and the growth was rapid. Working with chicks, Hauge[16] demonstrated that this growth-promoting factor was essential for normal growth and development. Since riboflavin has a direct influence upon body cells, a shortage of this factor affects the body as a whole, stunting the growth, and causing premature aging.

Nicotinic acid (vitamin B_2), besides its important antipellagra value, has been shown by Elvehjem[17] to be essential for the growth of rats. That its deficiency interferes with growth and development in children is evidenced by the poorly developed, wasted appearance of those suffering from pellagra.

Deficiency in vitamin C (ascorbic acid) produces scurvy. The effect of scurvy upon the growth and development of the child is well known. The disease so affects the bones that for many years it was considered a variety of rickets. Strangely enough the most rapidly growing bones at the particular age at which scurvy occurs are those most affected. In the affected regions bone formation ceases[18] and the existing osseous shell becomes rarefied. It appears that in the absence of vitamin C the osteoblasts are unable to function. Since vitamin C deficiency seldom acts alone, the condition is rendered even more severe when complicated by rickets.

The human infant appears to need a high dietary content of vitamin C to meet the need for rapid growth and general metabolism. Human milk appears to take care of this need since it normally contains from four to five times more vitamin C than cow's milk. However, when the mother's diet is seriously deficient in vitamin C foods, the concentration falls to approximately that of cow's milk[19]. When the vitamin C intake is increased, the vitamin C value of the milk returns to normal.

Of all the vitamins none exercises such influence on linear growth as does vitamin D. Stearns[20] has demonstrated the relationship between the

intake of this vitamin and the rate of linear growth, and presents evidence that the increased rate of linear growth is not due to any other factor, since vitamin D influences skeletal growth and this in turn determines growth in length. Although vitamin D is needed throughout life the requirement is greatest during infancy. The harmful effects of rickets upon the skeletal system of the young are so universally recognized it can be readily seen that growth and development are certain to be adversely influenced. The effect of vitamin D deficiency may be seen in the adult where there is extensive resorption of bone in the disease known as osteomalacia.

Until recent years it was thought that vitamin E was specifically a reproductive factor but evidence has been gradually brought forth to show that it is also indispensible for normal growth[21]. One point that apparently has not been established is why this vitamin is apparently not required during the early period, but is required during the later periods of early life. It seems safe to assume that further research work will show it to be needed for growth throughout all periods of life, especially of early life.

Barrie[22] has demonstrated the influence of vitamin E on the thyroid gland. In this experiment female rats were depleted of vitamin E until sterility was established. The nutrient was then administered but only in small amounts so that instead of normal litters only three or four young were born in succeeding pregnancies. These young appeared normal at birth but they failed to grow and became definitely cretinous.

Although but a brief summary has been given of the influence of the various vitamins on growth and development, it can be seen that this influence is in most cases profound. The role played by vitamins is exceedingly complex and is rendered the more so due to the fact that so few vitamins act individually. They are intimately associated with the various food factors and in addition appear, in many cases, to depend one on another.

The study of the relation of vitamins to growth and development is most fascinating and will become even more so as new fields are developed. When the optimum has been reached in vitamin control over growth and development it seems reasonable to expect a general increase in child growth.

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OPERATIVE PROCEDURES FOR CERTAIN ABNORMALITIES OF THE YOUNG DENTITION

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Many abnormalities of eruption of the teeth in children confront the pedodontist and the orthodontist. Early detection and treatment or correction of these conditions will be mutually advantageous to both operators. It is the purpose of this paper to discuss three fairly common anomalies and set forth the best accepted procedure for the correction of each.

Submerged Second Deciduous Molar at Age Seven

The term submerged is misleading in that it presents the idea of sinking or the result of being depressed. Actually the condition is a failure of the deciduous tooth to move occlusally as the surrounding alveolar bone develops. This fact was established as far back as 1914 but more recently

further investigation has secured more information in regard to the process. Blumenthal has attempted to substantiate a mechanical aspect in that he claims, "where the permanent successors are congenitally absent, there is a tendency towards wedging downward into the mandible by pressure of the first bicuspid and first molar." This action can be understood readily and made to appear logical except that a permanent tooth usually is present beneath the submerged molar. Furthermore, these teeth are often bilateral in their occurrence and sometimes both jaws are involved. Therefore, it would seem incredible that tipping of the adjacent teeth should be the cause in all instances.

Trauma may be considered as a factor in submergence, particularly accidental sudden trauma; however, there is little to offer in the way of data to prove that trauma is effective. Likewise there is the possibility of trauma of the occlusion due to excessive eruption of the upper teeth. Again there is little factual basis for this belief. The final mechanical factor that could be mentioned is that of a force such as in the case of a tongue habit as Dr. Blumenthal has suggested.

Clinically, the very fact, that these teeth are so solidly set within the alveolus, and are so difficult to extract, lends itself to the theory of ankylosis. This theory has been so ably interpreted by Noyes that it bears quotation in its entirety: "In all normal reaction there is a certain rhythm which is a comparatively slow rhythm, but in these tissues there is this sort of rhythm between absorption and reformation. The areas of absorption and reformation are very close together. The alterations between construction and destruction apparently are at short intervals and the result is an interlock of bone and dentine and cementum which fastens the tooth and fixes it in its relation to the mandible or maxilla."

Malnutrition should be considered as an etiological factor because, in nearly all reported cases, there exists very poorly calcified dentin. Often this condition follows an earlier history of rickets with partial recovery. In these cases the bone about the tooth is densely calcified and devoid of living cells. It is the failure of the bone at the alveolar process to absorb and rebuild that produces the ankylosis. In reporting a case, Noyes states that the absorption of dentin and interlocking formation of bone has involved not only the floor of the pulp chamber and inner surface of the root, but it has extended up into large areas of the crown.

To offset this evidence, it may be noted that in many cases that have been sectioned there has been no bony union that could be demonstrated. In fact there was little absorption and those areas that had previously absorbed had been repaired by cementum. These instances tend to disprove the theory of ankylosis and shift speculation to the failure of an eruptive force.

It is generally conceded that the best operative procedure for a submerged molar at the age of seven or thereabouts is extraction. The extraction must be very carefully done and most certainly be preceded by a radio-

graphic examination. The bone which lies between the deciduous and the permanent tooth must also be removed or the permanent tooth may not erupt successfully. At this age it will be necessary to place a suitable space maintainer from the first deciduous molar to the first permanent molar.

The type of space maintainer required is, of course, dependent upon the individual case. Usually the best type is a one piece space maintainer to control the eruption of the first permanent molar. Willett describes one which is extremely stable. It consists of connected crowns overcast upon both the cuspid and first deciduous molar from which a spur is extended to the permanent molar. The extension should bear an occlusal rest and the end should tip gingivally. This design prevents both mesial drift and tipping of the permanent molar. The rest will allow the bar to be set in functional occlusion with the opposing teeth. It is advisable to place a nodule of gold at the point with which the median fossa of the opposing tooth occludes in order to enhance the function of the appliance for mastication.

In instances where the six year molar is fully erupted or nearly so it may be advisable to insert a semi-fixed bar functional space maintainer. This appliance consists of an overcast crown upon the permanent molar bearing an extension bar to which has been soldered, at its tip, a vertical round bar. A crown upon the deciduous tooth carries a round tube. The crown upon the deciduous molar is set first and the other placed with the bar in the tube. This appliance allows freedom of movement of the teeth and complete eruption of the permanent molar.

Second Deciduous Molar at Age Eleven With Permanent Successor Absent

The congenital absence of the second bicuspid is a very common problem for which there is no constant answer. Many factors must be considered before any decision can be made as to the fate of the deciduous molar. Of all these factors, namely, the age of the patient, the resorption of the root, and the location (unilateral or bilateral, maxillary or mandibular or both), the first is the most prominent though probably least important.

An explanation of this somewhat ambiguous statement will reveal its intent. It should be noted that the age of eleven was designated for this operative problem because, despite an attempt to examine patients early, the most frequent age that this anomaly is discovered is at about the age of normal exfoliation. Often no previous radiographic examinations have been made. Suddenly, either the parent or the dentist realizes that the tooth or teeth are being retained beyond the normal shedding period and the belated radiogram is made. It would appear to be good office practice to radiograph all children's mouths at or about the age of six, at least in the cuspid and bicuspid regions, to determine the presence or absence of the permanent successors to the deciduous dentition.

It is true that mere knowledge of an anomalous condition will not bring about its correction but the fact that its early discovery will result in periodic

re-examination will aid the operator to determine the correct treatment. If the problem has just been disclosed at the age of eleven there are but two courses to follow, namely: (1) retention and possible restoration, either temporary or permanent, and (2) extraction, followed by orthodontic treatment. Therefore, it will be seen here that the actual age of the patient has no bearing whatsoever upon the type of treatment.

Retention of the tooth presents, of necessity, an unknown factor, that of root resorption. At the time that the operator decides to retain the tooth, the roots may show no evidence of absorption and the tooth and the peridontal tissue may appear to be most stable. In this case the tooth can be restored, if there has been any attack by caries, and counted upon as a permanent unit of the adult denture. If in the future resorption does occur, a prosthetic restoration may be concluded.

On the other hand, where absorption is already advanced, extraction is immediately indicated. In all probability the deciduous tooth could not be retained until the patient was old enough to have a replacement made and there would be a subsequent drifting and tipping of the adjacent teeth accompanied by a maladjustment of the opposing occlusal plane. Depending upon the occurrence and individual requirements, the immediate treatment would either be closure of the space by orthodontic means, that of bringing forward the first permanent molar and also the second permanent molar, or, the insertion of a functional bar space-maintainer or similar appliance. The individual requirements are complicated by the fact that from one to all four of the second bicuspids may be missing. There may often be a mandibular bicuspid missing on one side and a maxillary on the opposite. The writer has seen all combination of the four teeth missing and just what is required in the case of orthodontic treatment depends upon the occlussion of the remainder of the denture. In all cases of retention, collaboration on the part of the operative dentist with the orthodontist is deemed most advisable.

Ectopic Eruption of the First Permanent Molar and Its Correction

While this condition is not common it is complex to predict, prevent, or correct. The premature loss of the deciduous second molar is frequently the result of this deviation in eruption. The phenomena by which this anomaly occurs is not fully understood because the physiology of bone development and root resorption are not fully explainable. The seriousness of this faulty eruption lies not only in the premature loss of the deciduous teeth but also in the frequency of a resulting malocclusion that is disfiguring. This fact is borne out in a report of six cases by Lewis. Sometimes there is partial resorption of the deciduous molar roots and, as a result, the erupting permanent molar is halted.

To quote Willett, because of his interest in similar problems, "Ectopic eruption of the first permanent molar may occur because the alveolar process in that region is soft in proportion to the density of the overlying gum tissue and the first permanent molar floats in the way of least resistance

until it breaks down the thin walls of process between it and the roots of the second deciduous molar."

Early diagnosis is important in order to institute proper treatment. However, the stage at which the condition presents usually determines the method of procedure. The patient most frequently presents himself for treatment either shortly before the loss of the deciduous molar or sometime afterwards. In the first instance there may be a crowding or an extrusion of the deciduous molar to the point where the teeth are prevented from occluding. Extraction is indicated and an appliance, such as Willett has described, should be inserted to guide the permanent molar to place. When the permanent molar is partially erupted an appliance that will affect a distal movement of the tooth must be placed. Lewis uses a band upon the tooth and an intermaxillary extension that will not only move the molar distally, but tip it as well. A modified jackscrew arrangement is sometimes advocated. Willett uses a rigid fixed occlusal bar with a disto-gingival extension from the first deciduous molar to guide the erupting permanent tooth.

In the maxillary cases which have been studied the radiographic evidence tends to show that the erupting second bicuspid is an aid in returning the molar to its normal position. In a contrasting manner, the mandibular second bicuspid usually tips distally and becomes wedged below the contour of the molar. In many cases it will be necessary to surgically remove part of the alveolar process above the erupting tooth to allow it to continue upward.

Early radiographic examination and preventive orthodontics are the only correct procedures in caring for these apparently simple but sometimes disastrous developmental anomalies.

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Simplified Tooth Brushing Technique

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In teaching tooth brushing to children in groups, one always stops to think—shall it be rotary, shall it be up and down, shall it be down in the upper jaw and up in the lower jaw, or shall it include the "shimmy" vibrating method. The lesson must take into consideration the age of the child

or group. The important point is to motivate the child, by explaining the importance of the act; and to point out an easy way to accomplish the desired result.

Many methods have been used. In schools with large groups of children we have found the following procedure very satisfactory:

(1) In the Maxilla begin on the buccal and move from the left to the right returning on the palatal surface from right to left. The brush is placed at an angle against the gums and is rotated from the gums downward toward the biting edge. All in all six strokes suffice for the buccal and six for the palatal. (Only four on the buccal and four on the palatal would be necessary for the child previous to the eruption of the first permanent molars).

(2) In the mandible the procedure is very much the same only the direction of the stroke is upward and begins at Mucco-Buccal fold.

(3) We then brush the occlusal surfaces beginning with the lower left. The motion is downward and forward using slight pressure to the count of six. We next brush the lower right, then the upper right, and finally the upper left. The motion in the upper jaw is upward with slight pressure against the teeth and outward. This brings us back to the position from which we started—the upper left side.

The advantages gained are:

1. A quick understanding of how far the child or group has progressed,
2. An easy method to follow,
3. An easy sequence to remember,
4. The elimination of attempted short cuts.

ETHYL CHLORIDE
As a General Anesthetic for Children

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Ethyl Chloride has become a valuable aid in dentistry for children as a general anesthetic involving short oral operations. We feel that its successful use has been proven by the number of cases administered at the Forsythe Clinic without one fatality.

A thorough knowledge of the physiological action of Ethyl Chloride on the different systems of the body is necessary in order that any signs and symptoms which arise during an anesthetic may be understood.

Ethyl Chloride is a stimulant. At first, under its influence, the pulse is increased and the skin becomes flushed. Secondarily it is a powerful vasomotor depressant. The peripheral vessels are relaxed and there is a flow of blood from the vital centers, with lowered blood pressure and cerebral anemia. The circulatory centers become depressed; the pulse slows up, becomes feeble and in toxic amounts finally becomes imperceptible. It is

a direct depressant to the heart muscle, but not nearly as much as chloroform. Hare believes ethyl chloride to be nineteen times less powerful a depressant to the heart muscles than chloroform.

The method of administration is to recline the chair slightly, but not to an awkward position for the operator. If the child is large enough to put up a fight in the exciting stage, strap the knees to the chair. Place a rubber cork type mouth prop in position opposite the field of operation and instruct the patient to bite it hard. We use an ether mask over the nose and mouth with a few layers of gauze, which allows more oxygen to be taken in with the ethyl chloride than where the gauze is used over the mouth and the nose held shut. The anesthetic is a little smoother and there is less chance for the patient to stop breathing due to muscular spasm. Apply the ethyl chloride slowly so that it does not condense on the gauze and have the patient count after you, allowing time between each count for a full breath. As the patient stops counting, almost immediately, you will be able to detect a slight snore, the eye will become fixed—this is a stage of deep analgesia and time to operate. It is not advisable to produce anesthesia with ethyl chloride.

The action of ethyl chloride on the respiratory system during stimulation is increased and expiration is greater than inspiration. As the respiratory center becomes depressed respiration becomes more normal and inspiration and expiration become about the same. If the ethyl chloride is continued, respiration slows down, becomes very shallow and then ceases.

The action of ethyl chloride on the muscular system is that the muscles become rigid. Complete muscular relaxation cannot be obtained without some danger. If a sufficient amount is given to produce relaxation, respiratory and circulatory center depression will follow, with lowered blood pressure and cerebral anemia. Where complete muscular relaxation is desired, the choice of an anesthetic other than ethyl chloride must be made.

Action of ethyl chloride on the nervous sytsem affects the sensory side of the cortex first, dulling sensation on the sensory side of the spinal cord, the motor side of the cortex, and the motor side of the cord.

The action of ethyl chloride on the eye is different in adults than in children. In children there is almost immediate dilation of the pupils. Whether this dilation is due to the stimulation of the sympathetic system or immediate paralysis of the oculomotor is not known. With this dilation, the eyeballs are rolled upward or downward, and remain in this position until enough ethyl chloride is given to paralyze the extrinsic muscles. The eyes then become centralized and the pupils begin to contract somewhat. Secondarily dilation of the pupils is a danger sign.

The most common error in the administration of ethyl chloride, is in hastening the anesthetic and allowing frost to condense on the gauze.

There are not many complications encountered during an ethyl chloride anesthetic. When they do occur they are generally minor. Some of the most common are cyanosis, stopping of the breathing, fainting and shock.

Cyanosis is due to some obstruction in the respiratory tract and is usually due to mucus, vomiting or dropping of the tongue.

When a patient stops breathing it is most generally due to a spasm of the muscles of the larynx. Pressure on the diaphragm will bring inspiration.

Fainting, when it occurs, is the result of a sudden cerebral anemia. It is detected by a sudden pallor and can be overcome with aromatic spirits of ammonia.

Shock is detected by sluggish action of the patient's pulse. It is fast and light. Keep the patient warm and if respiration stops inject a stimulant, such as atropine sulphate or strychnine sulphate. Inflate the patient's lungs with oxygen.

In conclusion I should say ethyl chloride has proven its desirability as an anesthetic for children because first, it is a safe anesthetic, second, it is very easy to administer, third, there is a reasonable duration of the anesthetic period, and fourth, both induction and recovery are rapid.

DENTAL HEALTH EDUCATIONAL MATERIAL*

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In an attempt to review and evaluate the available dental health educational material, certain limitations were early encountered, namely, the inability of one, not trained in modern teaching methods, to properly perform such a work; the vast amount of material which has been published under this heading makes such a work too time consuming for a dentist, who cannot devote full time to such an assignment.

Much of the published material has been hurriedly prepared, is not authentic and factual and fails to meet the accepted theories and practices. Too many of the plans, articles, pamphlets and text books are 'padded.' True, each contains material of value but there are too many untruths and purely personal opinions of the authors, to permit the material to be placed in the hands of one, not a dentist, for educational purposes.

Lastly, the greatest obstacle in such a review, is presented by the question, 'Who should carry on a dental health educational program? The dentist, the teacher or the school nurse?'

We are informed that this topic brought forth a lively discussion at the open forum session during the Fourth Annual Meeting of the Good Teeth Council for Children, Inc., held in Chicago last year. State dental directors, school dentists, deans of four dental colleges, health education directors, teachers from twenty-two states participated in the discussion. The opinion of this group was rather sharply divided into those advocating that dental health education be carried on by the dentist while others felt that education is in the teachers' field.

*Prepared for the Children's Section, Detroit Clinic Club. March 18, 1938.

Those who advocated the school teacher as the proper person to introduce dental health education into the schools were met with the objections that the teachers' load is already too great and that she does not possess the purely technical knowledge necessary to present this subject. While those who maintained that this is the duty of the dental profession were met with some very pertinent criticisms, dentists do not possess the teachers' attitude and the teachers' language, too often the dentist's English is poor which the teacher resents, dentists and other health educators too frequently resort to "canned speeches," that health teaching material must be graded to fit the needs of the group to which it is to be presented.

One of the major objectives of all education is to make better citizens. The Commission on the Reorganization of Secondary Education lists health as the first objective of secondary education, placing health above the fundamental processes such as reading and writing, above worthy home membership, civic participation, worthy use of leisure, ethical character and vocation.

The writer feels that since modern educators have so highly ranked health in the field of education, that dental health education, if it is at all possible, should be done in the classroom under the direction of the school teacher. This cannot be satisfactorily done under the old method, in which the child was forced to learn a chapter in a health text book and then recite it back to the teacher.

Today, experts in the field of health education are more and more stressing the use of the problem solving method as a means of health education. The classroom becomes a laboratory active in finding practical solutions to problems that are apparent in the immediate school life of the pupils. Education then becomes a process of experiencing, of investigating, of learning scientific facts in various activities and experiences in the class room.

It is under this modern teaching method that we would introduce a dental educational program. The dentist has a very important part in such a program, first to convince all school authorities of its value, next to assist the individual teacher in the discovery of a dental problem in her group, then advise where authentic dental health material may be secured for reference purposes and lastly to act as adviser and counselor when difficulties are encountered in securing the desired information.

With such a program in mind, some of the printed dental educational material was covered, including that offered by the Bureau of Public Relations of the A.D.A., certain commercial houses, charitable organizations and school health text books. The text books read were not found acceptable in the chapters devoted to teeth. A review of dental slides, movie films and models was not attempted. The first part of the bibliography includes material valuable, in our opinion, for classroom use.

Dental instruction is always indicated at the chair, in talks by dentists in class rooms, before lay groups, over the radio and in articles for news-

papers and lay magazines, so a bibliography of material for this purpose is also included.

No claim is made that all the valuable material has been reviewed. No claim is made for originality of thought, the ideas of many have been used. It is not possible to give credit here to all sources, but we do wish to state that papers on this subject by Doctor Kenneth Easlick, Dental College, University of Michigan, Miss Alice Evans and Doctor K. R. Gibson of the Children's Fund of Michigan have been liberally used.

Material Recommended for Classroom Use

There are objectionable features in much of this material but it is the best available at this time.

1. The Problem Solving Approach in Health Teaching. School Health Bulletin No. 2.
2. Health Goals of the School Child. School Health Bulletin No. 3.

The Michigan Joint Committee on Health Education. Haven Hall, Ann Arbor, Mich.

Charts from the Bureau of Public Relations, A.D.A. 212 Superior St., Chicago.

3. Bodecker's Charts: Enamel Fissure Decay: prepared and photographed in color from microscopic sections. "One should be presented to every dentist who waits and watches pits and fissures."
4. McCalls Photomicrographs: Decaying the Six Year Molar. "Excellent discussion of this tooth, illustrating its fissures and faults, demonstrates the result of neglect."
5. Eight Large Health Charts designed for intermediate and high school grades. "Sound information, well illustrated."
6. Practical Tooth Brushing and Habit Forming Chart. "Should be one in each class room and dental office."

From the Detroit Dairy and Food Council, supplied free of charge.

7. A Drawing of the Structure of a Tooth.
8. Chart of Permanent Teeth with the Time of Eruption of Each.
9. Phamplet: Quality Row. "Use in primary grades."
10. Your Priceless Birthright. "Recommended by the Detroit District Dental Society, probably too strongly stresses the part played by diet in caries prevention."

Pamphlets from the Prophylactic Brush Co., Educational Dept., Florence, Mass., cost .10 each.

11. The Tale of the Tooth Brush. "Interesting and valuable on the development of."
12. Good Teeth, A Handbook for Teachers. " A graded outline of Health Habits, Knowledge and Attitudes concerning teeth.

Pamphlets from the Michigan Department of Health, Lansing, no charge.

13. Mouth Hygiene.
14. Your Teeth.
15. Building Sound Teeth.
16. Good Teeeth at All Ages. Metropolitan Life Insurance Co. "Recommended by A.D.A."
17. Preparing Teeth for School: Cleveland Child Health Association. 1900 Euclid Ave., Cleveland, Ohio.
18. Handbook of Dental Health Education for the Elementary School Teacher: Anna Wiecking and C. L. Drain. Bureau of Dental Hygiene, University of Iowa, Iowa City, Iowa.
19. The Teacher Improves the Dental Health of Children: Essex County Mouth Health Committee of New Jersey. Charge, 25c. Edith M. Lurcott, Executive Secretary, Council of Mouth Hygiene, 1143 East Jersey St., Elizabeth New Jersey.

Reprints from the Bureau of Public Relations, American Dental Association.

20. Wisan, J. M.: Public Health Aspect of Vincents Infection. Jour. ADA, October, 1935. "Useful to combat a school epidemic."
21. A Practical Dental Health Educational Program. "Good list of reference material on this subject."
22. Morrey, Lon W.: Significance of Clinical Experience as Related to Prevention for the Child Patient. "A sound answer to prevention for the child patient, emphasizes fact that hygiene and diet should not be overstressed."
23. Blauch, L. E.: Dentistry as a Career. Chicago Dent. Bulletin, June 11, 1936. "Vocational guide for high school use."
24. How to Build Sound Teeth—Children's Teeth—How to Use and Keep Them. "Valuable for the higher grades, should be revised, written 1923-24."
25. Bundesen, H. N.: Dentistry and Public Health—Care of the Teeth. "Probably the best pamphlet for classroom use, questionable attitude concerning dental floss and chewing gum."
26. In the primary grades dental health instruction is one of informal habit formation in which the subject matter is presented through health stories, plays, jingles and rhymes. Several primary teachers were asked to consider this type of material available at the Bureau of Public Relations. Most of the teachers judged this material to be of merit.

Part Two Bibliography Dental Health Educational Material for Dentists' Use at the chair, in the preparation of talks for classrooms, adult groups, radio addresses, etc. All of the material recommended for classroom use will be of value for this purpose.

The dentist who intends to engage in dental health education is entering a field in which most of us lack training. Dentists should ground themselves in the principles of health education and in the correct viewpoint of the position dentistry should occupy in public health service. The following books, pamphlets and papers are recommended for this purpose.

1. Turner, C. E.: Principles of Health Education. 1932. D. C. Health and Co., New York and Chicago.
2. Williams and Shaw: Methods and Materials of Health Education. 1935. Thomas Nelson and Sons, New York.
3. Wood, Thomas D.: A. Program for Public Schools and Teacher Training Institutions. 525 West 20th Street, New York City.
4. Easlick, Kenneth A.: The Dentist and Educator. "One of the best papers ever written for the dentist who intends to educate the public."
5. Easlick, Kenneth A.: Dental Health Education—Can Children Get It? Bulletin Michigan School Health Association, Vol. 5, No. 2, February, 1938. "Six objectives of a sound dental health program."

From the Welfare Division, Metropolitan Life Insurance Company.

6. Bibliography and Scientific Material in Health Teaching.
   Twenty-five Years of Life Conservation.
   A Practicable School Health Program.
   Health Through the Ages.
7. Davis, W. R.: The Great Need for Dental Health Education. Jour. A.D.A, October, 1930. "An excellent article for every dentist to read before he gives a lay talk."
8. Mikalonis, M.: Teaching Mouth Health to Children in a Private Practice. Jour. A.D.A, Jan., 1937. "A dental hygienist outlines her technique for patient education."
9. Wilson, C. W.: Chairman of the children's section of the Detroit Clinic Club: Special Children's Dentistry Issue Dental Survey. May, 1935. "Contains articles on the combat of dental caries, the first appointment, oral contagion, the x-ray and children, submerging teeth, behavior problems, tooth development and

malformations, space maintenance, accidental fractures, visual education at the chair and the care of the needy child."

Reprints from the Bureau of Public Relations A.D.A.

10. A Constructive Program for Dental Health. "Radio talk for parents on the necessity for and the value of a school program."
11. The Care of Children's Teeth. "Authentic and understandable talk for parent-teacher group."
12. Dental Health Week. "If the fifty-two weeks are not all taken there is merit in this proposal."
13. What is the Economic Value of Dental Health to the Community? "Good approach for a men's service or luncheon club."
14. Dentistry in Public Health. "Viewpoint of a public health dental worker."
15. Achievements and Results in West Virginia of the Jenkins-Jones Dental Dispensary and the McDowell County Dental Clinic. "In a poor coal mining community a tax supported clinic giving free dental service to all children increased the practice of private dentists. In ten years the number of dentists increased 271%, while the population increased only 32%."
16. The Preparation and Delivery of a Speech. "The technic for a lay talk."
17. The Relation of Dental Infection to Systemic Disease. "A type of radio talk that is interesting and has health education value."
18. Radio Talks published by the Bureau of Dental Health Education, A.D.A., 212 E. Superior St., Chicago. "Source for radio talk ideas but some of these are too general and loosely worded."

"CAN DECAY OF THE TEETH BE PREVENTED?"*

Walter T. McFall, D.D.S.
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Yes, decay of the teeth not only can be prevented but is being prevented daily. There is possibly more misinformation about the decay of teeth and the cause and cure of so-called pyorrhea than there is about any one other single subject except it be—religion. How true Josh Billings has written, "It *ain't* so much what folks don't know as 'tis they know so much what *ain't* so." There is nothing permanent except change. The American public is often placed in such a quandary because of the manifold theories, disagreements, advertisements and lack of definitely proven useful knowledge on this subject from those who are supposed to know or from those to whom a person may go for help, that all too often the public is forced to doubt the efficacy of dentistry and the absolute importance of availing itself of what can and is being done to prevent and control this greatest disease of the human race, dental decay.

There is no magical, mysterious short cut to glorious good health. No great university can teach you by one of its extension courses how to prevent decay of the teeth. The greatest philosopher of your day and mine cannot philosophize away the toothache. No medicine or proprietary preparation sold in a jar, tube, box, can or bottle will protect your teeth from the

*A Radio Talk.

ravages of tooth decay. No single factor will do the job to everyone's satisfaction and no individual or organization can guarantee you against the scourge of decaying teeth; but the picture is far from hopeless and helpless, the remedy is fairly simple, it concerns mainly the most important person in your life—the method of preventing decay of the teeth rests almost entirely with you—and with your dentist. Let us be fair, let us be honest, let us be reasonable.

What are teeth, when are they formed, why are teeth different from any other part of our body? From our hygiene lesson in public school we were taught that, "Teeth are hard, bony-like projections growing in the jaws and are used for biting and chewing so we can swallow the food we eat more comfortably." Teeth are vital living important parts of our body. True, teeth are one of the hardest substances found in our body and the enamel covering of the teeth is the hardest known structure in our body, much harder and denser than bone. Teeth are not only accessory organs of speech but are so necessary to the maintenance of buoyant health. We must have well cared for comfortable teeth if the process of digestion takes place normally. Teeth give form to the face and influence the features by which individuals are appraised and identified. It is from the mouth and chin that disposition and character are most assuredly to be judged. Teeth are in many instances one of the main indexes to actually what is taking place in the body. The diseases affecting the teeth always have a close relationship to the health of the whole body. Many of the diseases we are heir to first manifest themselves to the well trained physician or dentist by the condition of the mouth and teeth. When decay of the teeth is allowed to run rampant the most hurtful and poisonous of toxins are generated and disseminated throughout the body, attacking the weakest parts and the most vital organs.

The twenty baby or first teeth are formed four to six months before the birth of the child. What mother consumes in her prenatal diet, what happens to mother from a health standpoint before the baby arrives has everything to do with what kind of teeth the baby will have. Mother and mother alone is responsible for the teeth of her baby. These twenty baby teeth are supposed to serve the person possessing them through life's most critical and trying period—infancy, babyhood and childhood to adolescence. This is the time of life when the nervous and digestive systems do most of their growing; when contagious and infectious diseases are accosted; when food or eating habits are most firmly fixed. Every child deserves the right to be well born, to be given a chance to grow in wisdom and stature, in favor with himself and his fellow-man; are you, mother, giving your child his just due concerning his teeth and health? These twenty baby teeth serve the child until he is a young man or young woman. The first permanent teeth to erupt are not formed before birth, and because so little attention is given this important matter more defects are found in the first permanent teeth to erupt than in nearly all the other permanent teeth put together. Guard well these first permanent teeth which erupt behind the last baby

molar teeth often before any of the baby teeth are lost. Teeth are different from other organs of the body because they are the only structures in our body where there is no natural provision for repair when damage or infection once gains admission. If an arm or leg is broken, whether one goes to a physician or not, that arm or leg will heal itself,—true, it may not heal straight, but it will repair itself. If a nerve or blood vessel is cut or damaged, except it be one of the vulnerable nerves or blood vessels, repair and regeneration will surely occur, but not so with a tooth, for once it is fractured or cracked, or a cavity or hole appears in any of its five surfaces, and every tooth has five surfaces, one hundred and sixty surfaces in a full set of teeth, then that tooth progressively gets worse and finally toothache, an abscess formation and death of the tooth results, causing a change in shape of the whole mouth and face, affecting seriously the sinuses, the air passages, digestion, and acting as a breeding point for the most virulent of poisons found in the body.

A moment ago I told you no one thing would prevent the teeth from decaying, this is right. Diet alone will not prevent teeth from decaying. Brushing the teeth and gums with any and every dentifrice, mouthwash or germicide on the market will not by itself, prevent decay of the teeth. Going to the dentist from early childhood to old age and senility will not protect you against decaying teeth. Ah, I can hear you groan and say, "Well, what's the use?" but there is a need; the picture is not all black and filled with a fatalistic futility, far from it, my friends, for the one you should count on the most is the one who can help you overcome this disease and the encumbering train of evil which always follows in its wake. There must be a cooperative effort on your part, the part of the dentist and the knowledge which is ours to use, enjoy and profit from here and now. No one thing can or will prevent decay of the teeth because we do not know in every instance what causes teeth to decay, but we do know that by a strict program of all three of these all important avenues to success; namely (1) proper diet and nutrition, (2) intelligent home care and hygiene of the teeth, (3) regular and systematic visits to the dentist early in life and at intervals where the dentist might have opportunity to aid you in keeping your teeth in good repair, and the all important preventive and health service, he and he alone is capable of giving your mouth and teeth—this trio can and will continue to prevent decay of the teeth.

Strong, healthy useful teeth are the result of . . .

1. Good Nutrition—with particular stress on the attention to the health of, and proper selection of foods for the expectant and nursing mother; the pre-school and school child. Sane eating habits and proper, thorough mastication or chewing on both sides of the mouth is essential. Proper mastication is a first aid to digestion and is also necessary for jaw and tooth development in childhood and for maintaining the health and supporting tissues all through life. Eat what you should have rather than what you think you should have. Have regular meals at regular times with

supervised or controlled between meal eating.

2. Adequate Home Care of the Mouth and Teeth—thorough and systematic cleaning and stimulation of the mouth and teeth at least each morning and night, oftener if possible. The selection and intelligent use of the correct style or type of toothbrush best adapted to your mouth. Have your dentist teach you the best method to employ in brushing and massaging your teeth and gums. If certain abnormal or unusual conditions are found in your mouth, these conditions will of course require special instructions and care. The person with so-called crooked teeth has a much harder time keeping the mouth and teeth healthy than does the person with a well-rounded arch and strong, well supported set of teeth.

3. Regular and Systematic Visits to Your Dentist—select your dentist with care just as you do your physician. A child should be acquainted with his friend the dentist by two and one half years of age, earlier than this if stains or defects are noticed on the little teeth. The child and the adult should visit the dentist as often as the dentist deems necessary if he is to do his part in preventing the teeth from suffering losses he cannot control. No defect is too minor to require immediate attention. No cavity or hole in a tooth, either child or adult tooth, is ever too small to fill. Every baby tooth should be retained and repaired to assure its remaining in a healthful, useful condition until the succeeding permanent tooth replaces it in that particular mouth. Remember it requires time to make a real examination in your mouth, there are one hundred surfaces to be examined above the gums in a child's mouth five years of age, there are one hundred and sixty surfaces to be examined in an adult's mouth. No examination is or can be complete without the aid of the x-ray, for the dentist can no more tell what is lurking beneath your gums than you can. Insist upon and demand the assurance and insurance that only a carefully made x-ray can give you. Most boys and girls have defects in their first permanent molar teeth, and all of the molar teeth, due to the usual structural defects nearly always found in them, they need a close examination and usually a preventive treatment soon after their appearance in the mouth. Any defect which causes pain, toothache or discomfort makes the dentist's chance of helping you a great deal more hopeless and helpless, visit your dentist early and regularly, allow him to help you help yourself, to protect your health, to prevent caries or decay of your teeth, you have an important part in this work, so does your dentist. If parents, individuals and dentists all did their part, decay of the teeth in most instances could be prevented. Will you not give your child his rightful chance, will you not help yourself to better health, longer life, more happiness by preventing decay of your teeth?

NEWS AND VIEWS

Secretarial Message

Your Secretary within the pages of this issue wishes to bring to the

attention of the membership at large the fact that our organization boasts three new state units since The Journal last went to press. We wish to congratulate these new units and their membership. The A.S.D.C. and all its membership expect great achievements from these sectional components. They are:

The New Jersey Unit
The Massachusetts Unit
The Tennessee Unit

Your President, Dr. Frank Lamons, has been working hard with his various committees to assure a great meeting at Houston. The Program Chairman, Dr. Dave Blonstein, the Local Arrangements Chairman, Dr. Stella Risser, and the Luncheon Chairman, Dr. E. L. Pettibone, have all worked hard with Dr. Lamons in order to produce an outstanding meeting. The official hotel for the A.S.D.C. meeting has been designated and it is the La Marre Hotel, Houston, Texas. As in the past, other organizations are to be invited to meet with us so that we may benefit mutually from these associations. A detailed presentation of our annual meeting program will be presented within the pages of the issue of this Journal which immediately precedes the Houston get-to-gether.

R. M. Erwin, Jr.

In anticipation of the Sixth Tri-Annual Pacific Coast Conference Meeting, held in Portland, Oregon, July 7-11, 1941, the A.S.D.C. in the Conference Area was favorably represented. Plans were made to present a Panel Luncheon, under the auspices of the A.S.D.C.

The title of the Panel was "Comparative Pediatric, Obstetric, and Pedodontic Protective Dietetics and Objectives."

The personnel of the Panel were the following:

Dr. E. V. McCollum, John Hopkins University, as Guest Essayist of the Conference, acted as Mediator.

Obstetrician, Dr. Albert W. Holman.

Pediatrician, Dr. Morris L. Bridgeman.

Pedodontist, Dr. Floyd Eddy Hogeboom.

If it is at all possible, those who arranged the Panel will make available to our Journal a verbatim presentation of the Panel so that the membership at large may have an opportunity to benefit from this excellent recent program.

Massachusetts

A Unit was founded and the following officers selected: President, Dr. Walter E. Briggs, 20 Bates Block, Attleboro, Mass.; President-elect, Dr. Wendell Aherns, 18 Bank Row, Pittsfield, Mass.; Secretary-Treasurer, Dr. Mark D. Elliott, 358 Commonwealth Avenue, Boston, Mass.

Dr. Paul Losch was very active in the organization of this Unit and they have a membership of 51. Ken Easlick was there for the meeting and helped with the formalities.

Tennessee

A Unit was organized in Tennessee. The following officers were selected: President, Dr. E. Jeff Justis, Exchange Building, Memphis, Tenn.; Vice-Presidents, East Tennessee—Dr. E. F. Huckaba, Chattanooga; Middle Tennessee—Dr. Wyatt Martin, Pulaske; West Tennessee—Dr. C. M. Williams, Memphis; Secretary-Treasurer, Dr. L. T. Kennedy, Medical Arts Building, Knoxville, Tenn.; Councilmen, East Tenn.—Dr. L. F. Matthews; Middle Tenn.—Dr. W. C. Rhodes; West Tenn.—Dr. J. H. Leonard.

There were twenty present at the luncheon for the organization. Dr. Leonard Pogue of Nashville was active in forming this Unit.

REVIEWS

Walter C. McBride

Books and more books and most amazing is the fact that in the recent past, since this last issue, the authors have all been non-Columbians. Someone facetiously issued the statement that the University of Columbia staff must publish textbooks, or else. Well, it looks as if there'll be a number of dismissals there this autumn when school opens for the west is outdoing them. The following are of recent vintage.

The Council of Dental Therapeutics of the American Dental Association has issued the sixth edition of *Accepted Dental Remedies,* the pocket size compend serving as a guide for official drugs and prescriptions. A rather handy book to have about when you want an economical medicament or when you want to make a proprietary preparation nonproprietary.

Ethel Covington, a dental hygienist associated with Henry Hoffman of Denver, contributes her book, *"The Efficient Dental Assistant,"* to dental literature.

The author has an exceptionally good grasp of her subject and aptly narrates what an assistant-secretary should do to become a good assistant and a good secretary. It includes among others, chapters on professionalizing the office, processing radiograms, and in general discusses the hundred and one little things common to the routine of an office.

Here's a text to put on your reference shelf for the express purpose of sending it home with your new assistant for her first week's home work.

The Oral Hygiene Committee of Greater New York edits the *Radio Manual.* It contains the transcript of forty talks given over Municipal Broadcasting Station WNYC in New York City. These talks were prepared and made by some of the most outstanding dentists in the profession and are particularly interesting to the reader whether professional or layman.

"This Manual," says the publisher, "will be of great value and assistance to those who are contemplating public addresses or the preparation of dental educational literature for lay use. A copy of this Manual in the waiting room will inform the patient of the many branches of dentistry, with which a practitioner must be familiar.

"It is planned to release this Manual in October and as only a sufficient quantity will be printed to fill the orders on hand at the time of going to press, we suggest that you order your copy at once. The price of the Manual is $1.50."

The W. B. Saunders Co. recently issued the 19th edition of the *American Medical Dictionary* by Dorland. It is revised, enlarged and includes the latest word usages common to medicine, dentistry, pharmacy and the allied sciences. Dr. Dorland is a member of the committee on nomenclature of the A.M.A.

If you refer to this book regularly when in doubt, you'll be saying parodontics, pedodontics, radiograms, etc., instead of the former extra-syllabilized terms, and be able to enunciate, veteran-like, the presently popular sulfanilamide compounds. However, if you procure the book, tear out page 601 including the term gingiva, pronounced (jin-ji'va). With all due respect for the author and for our local parodontists, whom the writer has secretly accused of either being screwy or adding a little extra "dog," he'd still, for the sake of euphony, say (gin'giva). Pleasant sounding words are musical, the harsh ones discordant.

The House of Mosby issues three new editions. *"Oral Surgery"* by Mead, *"Crown and Bridge Prosthesis"* by Tylman, and *"Complete Dentures"* by Swenson.

Mead's *Oral Surgery,* in its second edition, is about as big comparatively as the author is diminutive, 1316 pages. To write about this text is difficult except to say that according to its table of contents and index you may find the solution to all your surgery problems therein, amply described and portrayed.

The *"Theory of Crown and Bridge Prosthesis,"* issues from the pen of the professor of Prosthesis at the University of Illinois. He evidently thoroughly believes in the statement, "a picture is worth a thousand words," for in his text are an even thousand illustrations. Like the text above it is sufficiently voluminous to include every pertinent possibility in bridgework.

Complete Dentures by Swenson, professor of Prosthetic Dentistry at the New York College of Dentistry, is like the above mentioned book inasmuch as it carries an almost equal number of illustrations. The publisher has been exceedingly generous in accepting so many illustrations both for his text and the aforementioned. In this treatise the author carries four types of cases to completion, each with step-by-step explanation and illustration. Both chair and laboratory procedures are clearly outlined from the oral examinations through the processing of dentures, to their insertion and care. He further stresses the importance of doing one's own processing or if not, be sufficiently versed that he may satisfactorily direct the procedure.